

UNITED STATES DISTRICT COURT
DISTRICT OF DELAWARE

IN RE: ADAMS GOLF, INC.,
SECURITIES LITIGATION

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CIVIL ACTION NO. 99-371-KAJ
(CONSOLIDATED)

DECLARATION OF A. CRAIG MACKINLAY

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Dated: October 9, 2006

DECLARATION OF A. CRAIG MACKINLAY

1. I am the Joseph P. Wargrove Professor of Finance at the Wharton School of Business of the University of Pennsylvania. I have been teaching at Wharton since 1984. I received my Ph.D. and an MBA degree from the University of Chicago. My areas of expertise include testing asset pricing models, event study analysis, stock market behavior, market microstructure, and econometric modeling. I am the co-author of the Ph.D. textbook, *The Econometrics of Financial Markets*, Princeton University Press, 1997, and have written and published articles on econometric modeling, asset pricing models, event studies, and the behavior of securities prices. Currently, I am a member of the Morgan Stanley Institutional Equity Academic Advisory Board; a member of the Editorial Advisory Board of the Investment Management Consultants Association Journal; a Research Associate for the National Bureau of Economic Research; and a former director of the American Finance Association and a former member of the Scientific Advisory Board of Investment Technology Group. I have been asked to examine the scientific validity of the methodology employed by Dr. Christopher M. James in his expert report in the Adams Golf Incorporated Securities Litigation.

2. Based on my examination of Dr. James' event study methodology used for the measurement of the impact on the value of Adams stock of gray market activity and his modeling of the relation between market share and the value of Adams Golf stock, I conclude that his analysis is scientifically sound. Specifically, my conclusions are:

- (a) The event study methodology that Dr. James employs is consistent with accepted practice in academic research and is scientifically valid. The approach has been used in peer reviewed publications and has a known error rate.
- (b) Dr. James analysis based on monthly returns is not an event study. This analysis is an examination of the relation between market share and stock value for Adams Golf. The use of monthly data is appropriate and preferred over the use of daily data.
- (c) Dr. James analysis of the relation between market share and market value for Adams Golf appropriately uses data that extends beyond the class period.

Discussion of the James' Event Study

3. The price of Adams Golf common stock declined over the period from July 10, 1998 to October 22, 1998. Plaintiffs allege that the price decline is the result of a failure to disclose the existence and risk of a gray market for Adams Golf products.

4. On June 9, 1998 Adams Golf issued a press release indicating concerns with its product being sold at Costco. Further, it is public information that gray marketing is an issue in the golf industry. Thus, the existence of a gray market was public information on July 10, 1998 when Adams Golf stock began trading.

5. From July 10, 1998 through October 22, 1998 the competitive environment for Adams golf changed in an unpredictable manner for a couple of reasons. First, there was a general slowdown in the golf industry putting downward pressure on sales and margins for all companies. Second, products by Orlimar, introduced in January 1998, that compete directly with Adams Golf's main product line were gaining market share.

6. In an efficient market, prices reflect publicly available information. Therefore, the impact of the existence and risk of a gray market, which was public, should be incorporated in the price of Adams Golf but the unpredictable changes in the competitive environment would not. If, as the plaintiffs allege, the price decline of Adams Golf was caused by a failure to disclose the existence and risk of a gray market, then when information about the gray market became publicly available, the value of Adams Golf stock would experience a negative abnormal return.

7. Dr. James conducted an event study to separate the alleged role of gray marketing from the general impact of a changing competitive environment. As required for an event study, Dr. James identified dates when information about gray marketing of Adams Golf products became publicly available. The allegation of the plaintiffs that market participants were unaware of the gray marketing issue, predicts that in response to the information release Adams Golf stock would experience a negative abnormal return. Of the event dates identified by Dr. James, only the abnormal return on October 22, 1998 was negative and statistically significant. However, the price reaction of Adams Golf on that day was most likely driven by the new

information released by Adams golf that fourth quarter sales were expected to be weak and the accompanying downward revisions in analysts' forecasts of fourth quarter earnings and not by the previously known gray market issue.

8. In plaintiffs' motion to strike the testimony of Dr. James, it is opined that "Dr. James' methodology is flawed and his opinion is unreliable because he violates accepted practices with respect to "event study" regression analysis of daily stock returns."¹

9. My 1997 publication on event studies² is cited as support for this opinion. Specifically, the plaintiffs' motion claims that my discussion of the difficulty detecting wealth effects of regulatory changes applies to this case.³ But the argument I make in my published work is being misapplied. Dr. James does identify a small number of distinct dates when information about the gray marketing issue enters the public domain. In contrast, with regulatory changes, the changes are generally debated by politicians in the public arena on an ongoing basis for a long period of time. This ongoing debate makes the identification of a small number of event dates difficult. Even if, in the case at hand, there are some other instances in the class period beyond the event dates where information becomes available, if the public was truly unaware of the gray market issue one would expect a price reaction on the identified dates. The idea that the gray market information is gradually incorporated in the price of Adams Golf over a three month period is not compatible with an efficient market for Adams Golf stock. Further, the argument in the plaintiffs' motion that non-public information such as internal memoranda and purchase orders should be reflected in the price is not plausible.

10. In the plaintiffs' motion it is further stated that "Dr. James uses an arbitrary and unscientific estimation or base period."⁴ This opinion is based on concern that the estimation

¹ Plaintiffs' Opening Brief in Support of Motion to Strike and Exclude Testimony of Christopher James, Ph.D., page 2.

² A. Craig MacKinlay, "Event Studies in Economics and Finance," Journal of Economic Literature (March 1997).

³ Plaintiffs' Opening Brief, pages 6 and 7.

⁴ Plaintiffs' Opening Brief, page 10.

window Dr. James employs includes the event dates. To support the concern the following paragraph from my work is quoted⁵:

Given the selection of a normal performance model, the estimation window needs to be defined. The most common choice, when feasible, is using the period prior to the window ... Generally the event period itself is not included in the estimation period to prevent the event from influencing the normal performance parameter estimates.

11. The event windows consist of the three dates that Dr. James identifies as having information about gray marketing being publicly disclosed. It is true that Dr. James does include these three dates in his estimation window. However, since the event dates only represent a small part of the estimation window (about 3%), such an approach does not jeopardize the scientific integrity of the study. Dr. James is quite careful to be certain that this is the case. He checks that the inclusion of the event dates do not have a material impact on the model estimation by using a "rolling regression" procedure where each event date is excluded from the estimation window.

12. Further, Dr. James searches for information releases on the non-event dates with large abnormal returns. This is prudent since it will reveal if his original event date identification procedure has missed any days where information relating to the gray market issue is released.

Discussion of the James' Monthly Regressions

13. In plaintiffs' motion to strike the testimony of Dr. James, it is opined that "Dr. James' methodology is flawed and his opinion is unreliable because in his event study he relies improperly on monthly regressions that he runs long after the class period concluded."⁶

14. My published work on event studies (Journal of Economic Literature (1997)) is cited to support this opinion. Specifically the plaintiffs' motion references the following paragraph from my published work:

⁵ Plaintiffs' Opening Brief, page 11.

⁶ Plaintiffs' Opening Brief, Ph.D., page 2.

Given the availability of various intervals, the question of the gains of using more frequent sampling arises. To address this question one needs to consider the power gains from shorter intervals ... As one would expect given the analysis of section 7, the decrease in power going from a daily interval to a monthly interval is severe. For example, with 50 securities [analyzed in one study] the power of a 5 percent test using daily data is 0.94, whereas the power using monthly data is only 0.35 and 0.12 respectively. The clear message is that there is a substantial payoff in terms of increased power from reducing the sampling interval.

The discussion in this paragraph does not have relevance for the monthly regressions that Dr. James conducts.

15. The objective of Dr. James' analysis using monthly data is to verify that there is an empirical relationship between the market share of Adams Golf and the value of Adams Golf stock. To do this Dr. James analyzes the relation of monthly stock returns with market share over the period July 1998 to December 1999. He finds that the relation is statistically significant. This is important support for the hypothesis that the decline of Adams Golf stock can be attributed to competitive pressures.

16. Using monthly data for this analysis is appropriate and the right thing to do. The market share observations are available only on a monthly basis so it would not be sensible to use daily data. Using daily data would not provide any more information and would introduce problems with the measurement of the statistical reliability of the estimates.

17. Because the class period extends across only three months, the time period is too short to be relied on in isolation to estimate the regression model. Further, given the objective of developing an understanding of the relation of market share and stock value, there is not any reason to limit the analysis to that period. In fact, if Dr. James did rely only on the period from July 1998 to October 1998, I would have been highly critical. Thus, in my opinion, the use of an extended time period contributes to the market share analysis of Dr. James being scientifically sound.

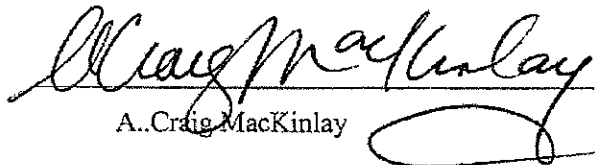
Summary and Conclusion

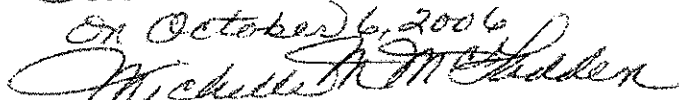
18. Dr. James' event study methodology is consistent with common academic practice and scientifically sound.

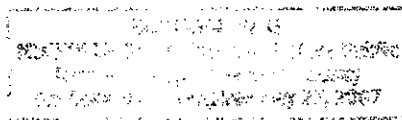
19. Dr. James approach of using monthly data and an extended time period to model the market share relation with stock value is scientifically sound and, in fact, is necessary to be such.

20. Based on my examination of Dr. James report, overall, I have concluded that it meets the scientific standards that should be demanded of such analysis.

Respectfully submitted on October 6, 2006


A. Craig MacKinlay

SWORN & SUBSCRIBED
On October 6, 2006




**UNITED STATES DISTRICT COURT
DISTRICT OF DELAWARE**

CERTIFICATE OF SERVICE

I hereby certify that on October 9, 2006, I have caused the foregoing to be served by Hand Delivery which has also been filed with the Clerk of Court using CM/ECF which will send notification of such filing(s) to the following:

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I hereby certify that on October 9, 2006, I have sent by electronic mail the foregoing document(s) to the following non-registered participants:

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